

MENTAL RETARDATION



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INTRODUCTION

Mental retardation is a generalized disorder, characterized by significantly impaired cognitive functioning and deficits in two or more adaptive behaviors with onset before the age of 18.

Once focused almost entirely on cognition, the definition now includes both a component relating to mental functioning and one relating to individuals' functional skills in their environment.



INTRODUCTION CONTD.....

- The term "mental retardation" is a diagnostic term designed to capture and standardize a group of disconnected categories of mental functioning such as "idiot", "imbecile", and "moron" derived from early IQ tests, which acquired pejorative connotations in popular discourse over time.

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INTRODUCTION CONTD.....

- The long-used term “mental retardation” has acquired an undesirable social stigma. Because of this stigma, doctors and health care practitioners have begun replacing it with the term "intellectual disability."
- As this change is recent, the term "mental retardation/intellectual disability" (MR/ID) is used to mark the transition in terminology.



INTRODUCTION CONTD.....

- Mental retardation/intellectual disability (MR/ID) can be genetic or the result of a disorder that interferes with brain development.
 - Most children with MR/ID do not develop noticeable symptoms until they are in preschool.
 - The diagnosis is based on the results of formal testing.
 - A child's life expectancy is based on the extent of mental and physical problems.
 - Proper prenatal care lowers the risk of having a child with MR/ID.
 - Support from many specialists, therapy, and special education help children achieve the highest level of
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DEFINITION

- Mental retardation / intellectual disability is significantly sub-average intellectual functioning present from birth or early infancy, causing limitations in the ability to conduct normal activities of daily living.
- Mental retardation is a term used to describe individuals who exhibit sub-average intelligence, as measured by a standardized intelligence quotient (IQ) test, and deficits in adaptive functions (i.e. activities of daily living).




DEFINITION CONTD.....

- DSM-IV and the tenth edition of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) specify an IQ of 70 or less in their diagnostic criteria for mental retardation. IQ scores are presumably derived from standardized intelligence tests that meet appropriate psychometric criteria for reliability and validity.



INTELLIGENCE (INTELLECT)

- Derived from Latin verb “intellegere” means “to understand”.
 - Ability to have skills necessary to face requirements & challenges.
 - Used as umbrella term for abilities to reason, plan, solve problems, to think abstractly, to use language, to learn & comprehend ideas.
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DEFINITIONS

WEBSTER'S DICTIONARY:

- ❖ Intelligence is a capacity to perceive & comprehend meaning, news and information.

ALFRED BINET:

- ❖ “Intelligence is judgment, otherwise called good sense, practical sense, initiative, the faculty of adapting one's self to the circumstances”.



DEFINITIONS CONTD.....

DAVID WECHSLER:

The aggregate or global capacity of the individual to act purposefully, to think rationally & to deal effectively with his environment.

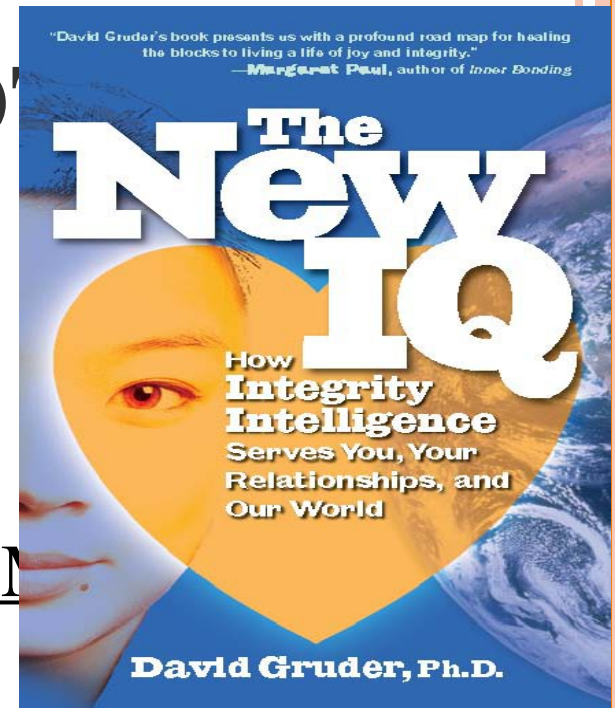
STERNBERG & SALTER:

“Intelligence is goal – directed adaptive behavior”.

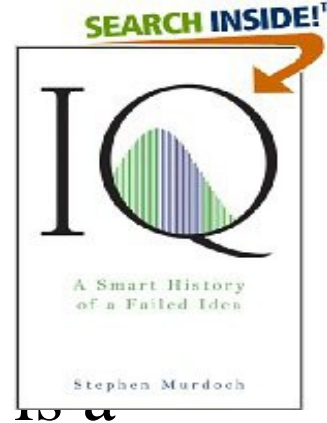


INTELLIGENCE QUOTIENT (IQ)

- The term IQ was coined by psychologist WILLIAM in 1912 .
- IQ , as a proposed method of scoring early modern children's intelligence tests.
- Concept was given in early 20th century.



DEFINITION OF IQ



- IQ or intelligence quotient
score derived from on of several different
standardized tests attempting to measure
intelligence.
- Intelligence Quotient (IQ) = $\frac{MA}{CA} * 100$
- MA (Mental age) = individual's score obtained
- CA – Chronological age

INTELLIGENCE QUOTIENT CONTD.....

○ EXAMPLE:

If 2 children obtain an MA of 5 yrs on an IQ test, but one child is 4 yrs old and other 6 yrs old, so younger child is developing intellectually at a much faster rate.

○ CHILD (1) :- $IQ = 5/4 * 100 = 125$

○ CHILD (2) :- $IQ = 5/6 * 100 = 83.3$



Intelligence Quotient (IQ) Tests for Diagnosing Mental Retardation

INTELLIGENCE TEST	AGE RANGE	DOMAINS TESTED
• Wechsler Preschool and Primary Scale of Intelligence-Revised (Wechsler, 1989)	3 yrs to 7 yrs 3 months	Verbal IQ, performance IQ, Full-Scale IQ
• Wechsler Intelligence Scale for Children–III (Wechsler, 1991)	6 yrs to 17 yrs 11 months	Verbal IQ, performance IQ, Full-Scale IQ
• Wechsler Adult Intelligence Scale, Revised (Wechsler, 1981)	16–74 yrs	Verbal IQ, performance IQ, Full-Scale IQ
• Stanford-Binet Intelligence Scale: Fourth Edition (Thorndike et al., 1986)	2 yrs to adult	Verbal, quantitative, abstract/visual, short-term memory, composite score



Intelligence Quotient (IQ) Tests for Diagnosing Mental Retardation

INTELLIGENCE TEST	AGE RANGE	DOMAINS TESTED
Kaufman Assessment Battery for Children (Kaufman and Kaufman, 1984)	2 yrs 6 mos to 12 yrs 6 mos	Sequential and simultaneous processing, mental processing composite
Kaufman Adolescent and Adult Intelligence Test (Kaufman and Kaufman, 1993)	11–85 yrs	Crystallized and fluid scales, composite IQ
Differential Ability Scale (Elliott, 1990)	2 yrs 6 mos to 17 yrs 11 mos	Verbal, nonverbal reasoning, spatial abilities, general conceptual ability
Das-Naglieri Cognitive Assessment System (Naglieri and Das, 1997)	5 yrs to 17 yrs 11 mos	Planning, attention, simultaneous and successive processing, full-scale score



Intelligence Quotient (IQ) Tests for Diagnosing Mental Retardation

INTELLIGENCE TEST	AGE RANGE	DOMAINS TESTED
Colored Progressive Matrices (Ravens and Summers, 1986)	5–11 yrs	Figural reasoning
Columbia Mental Maturity Scale (Burmegerster et al., 1972)	3 yrs 6 months to 9 yrs 11 months	Reasoning ability, forming and using concepts
Test of Nonverbal Intelligence–2 (Brown et al., 1990)	5 yrs to 85 yrs 11 months	Reasoning ability, similarities, differences, relationships
Leiter-R (Roid and Miller, 1999)	2 yrs to 20 yrs 11 months	Nonverbal, fluid intelligence; visualization and reasoning; attention and memory



DIFFICULTIES IN MEASURING IQ

- In many ways, administering IQ tests to people with mental retardation is quite challenging, in terms of the testing situation itself and in the choice of an fitting IQ test.
- There is increased risk of co-morbid psychiatric or behavioral dysfunction.
- Even in persons without behavioral dysfunction, certain personality characteristics may interfere with testing.



DSM-IV-TR CRITERIA

&

ICD-10 CODES

FOR

MENTAL RETARDATION



DSM-IV-TR CRITERIA FOR MENTAL RETARDATION

A. Significantly sub-average intellectual functioning : an IQ of approximately 70 or below on an individually administered intelligence test (for infants, a clinical judgment of significantly sub-average intellectual functioning).



DSM-IV-TR CRITERIA FOR MENTAL RETARDATION

B. Concurrent deficits or impairments in present adaptive functioning (i.e., the person's effectiveness in meeting the standards expected for his or her age by his or her cultural group) in at least *two* of the following skill areas: *communication, self-care, home living, social or interpersonal skills, use of community resources, self-direction, functional academic skills, work, leisure, health, and safety.*

C. Onset before 18 years of age.




ICD-10

CLASSIFICATION



F70 - F79

MENTAL RETARDATION

- Detailed clinical diagnostic criteria that can be used internationally for research *cannot* be specified for mental retardation in the same way as they can for most of the other disorders in Chapter V (F).
 - This is because the two main components of mental retardation, namely *low cognitive ability* and *diminished social competence*, are both profoundly *affected by social and cultural influences* in the way that they become manifest.
 - Only general guidance can be given here about the most
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1. Level of cognitive abilities

CODE	LEVEL OF MR	IQ	MENTAL AGE
F70	Mild mental retardation	IQ of 50–69	9 to < 12 yrs
F71	Moderate mental retardation	IQ of 35–49	6 to < 9 yrs
F72	Severe mental retardation	IQ of 20–34	3 to < 6 yrs
F73	Profound mental retardation	IQ <20	Below 3 yrs
F78	Other mental retardation	Sensory, physical, behavioral impairments preclude standardized IQ testing	



2. Level of social competence

f79	UNSPECIFIED MENTAL RETARDATION	
<i>Specifiers for extent of behavioral impairment.</i>		
F7x.0	No, or minimal, impairment of behavior	
F7x.1	Significant impairment of behavior requiring attention or treatment	
F7x.8	Other impairments of behavior	
F7x.9	Without mention of impairment of behavior	



COMMENTS

- A specially designed multi-axial system is required to do justice to the variety of personal, clinical and social statements needed for the comprehensive assessment of the causes and consequences of mental retardation.
- One such system is now in preparation for this section of Chapter V (F) of ICD-10.



Levels of Mental Retardation

There are 3 levels of mental retardation:

- Mild mental retardation
- Moderate mental retardation
- Severe mental retardation



Mild mental retardation

- Among all mentally retarded population, 85 percent have mild MR, constitutes the largest group of people.
- These individuals appear similar to non-retarded individuals and often blend into the general population in the years before and after formal schooling.
- As adults, many of these individuals hold jobs, marry, and raise families. At times, they may appear slow or need extra help negotiating life's problems and tasks.



Mild mental retardation

- Many achieve academic skills at the sixth grade level or higher.
- More people with mild MR come from minority groups & low socioeconomic backgrounds. This overrepresentation of minority groups has been used to criticize IQ tests, as well as to highlight the importance of environmental-cultural and genetic influences on mental retardation.



Moderate Mental Retardation

- Moderate mental retardation, is seen in approximately 10 percent of the mentally retarded population.
- It includes people with more impaired cognitive and adaptive functioning.
- Diagnosed in their preschool years, and some show a clear organic cause for their delay.



Moderate Mental Retardation

- Many persons with *Down syndrome*, the most common chromosomal cause of retardation, often function in this range, as do many adolescents and adults with fragile X syndrome.
- Most children with moderate mental retardation require special education services, achieving academic skills at the second to third grade level.
- Needs for supportive services are continued throughout life; with proper supports, many live, work, and thrive in their local communities.

Moderate Mental Retardation

- In a study by Ross and colleagues, 20 percent of persons with IQs from 40 to 49 lived independently, whereas 60 percent were considered partially dependent, and 20 percent were totally dependent on others.
- In a similar way, some individuals in this range are employed in the competitive job market and need minimal job supervision, whereas others require more extensive supervision on the job and may work in sheltered workshops or other, more segregated settings.



Severe Mental Retardation

- Severe mental retardation occurs in approximately 3 to 4 percent of the population of people with mental retardation.
- Individuals at this level often have one or more organic causes for their delay, and many show concurrent motor, ambulatory and neurological problems, as well as poor communication skills.



Severe Mental Retardation

- Most persons with severe mental retardation require close supervision and specialized care throughout their lives.
- Some individuals learn to perform simple tasks or routines that facilitate their self-care or their ability to perform in a sheltered workshop or pre-workshop type of setting.




PREVALENCE

- According to some estimates, approximately 1 percent of the population has mental retardation as cited by DSM-IV.
- In particular, many have reasoned that mental retardation is more frequent—nearer to a 3 percent prevalence rate.
- Based on the current U.S. population, a difference of even 1 percent means that an extra 2.6 million Americans have mental retardation and may require services.

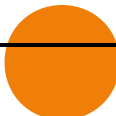


PREVALENCE CONTD.....

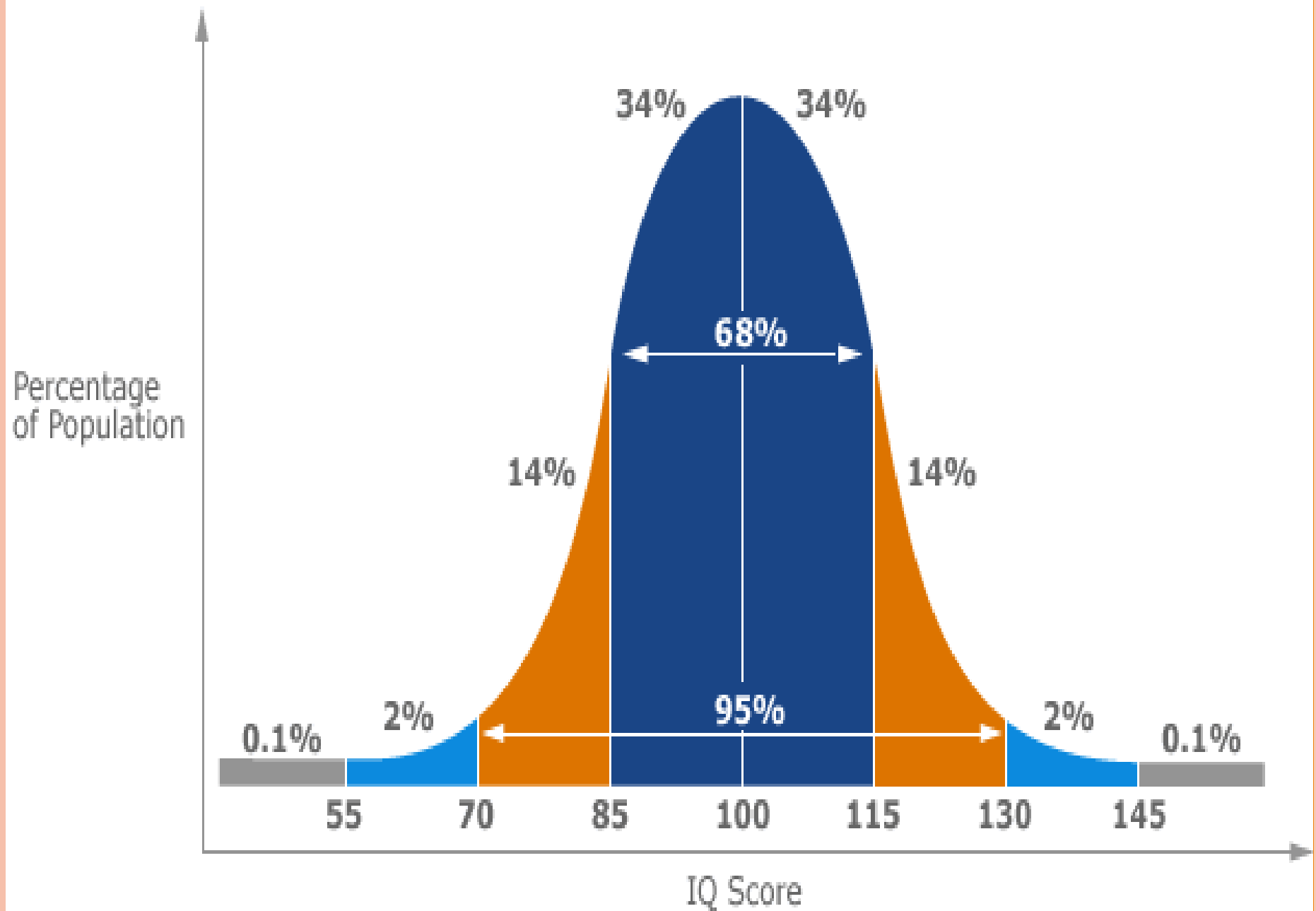
- Given a Gaussian, bell curve distribution of intelligence:
 - 2.28 percent of individuals should fall two or more standard deviations below the general population average of an IQ of 100, which translates into IQs below 70 on most psychometric tests.
 - Few individuals should have IQs that are below 55 or 40 (three or four standard deviations below the mean).
 - The percentage of persons whose IQs fall below 40 (four standard deviations below the mean) should equal
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NORMAL DISTRIBUTION OF IQ

IQ	DESCRIPTION	POPULATION IQ
> 130	Very superior	2.2
120-129	Superior	6.7
110-119	Bright normal	16.1
85-109	Average	59.1
70-84	Border - line	13.6
55-69	Mild Mental Retardation	2.1
40-54	Moderate MR	0.1
25-39	Severe MR	0.003
< 25	Profound MR	0.0000005



IQ Score Distribution



Classification of Mental Retardation Causes by Etiology and Frequency

Etiology	Examples	Estimated Frequency
<u><i>Prenatal causes</i></u>		
<u><i>Genetic disorders</i></u>		4–28%
Chromosomal aberrations, mono-genic mutations, multi-factorial malformation syndromes due to microdeletions	Down syndrome, tuberous sclerosis, phenylketonuria and other metabolic disorders, fragile X syndrome, familial mental retardation, Prader-Willi syndrome, Williams syndrome, Angelman's syndrome	



Classification of Mental Retardation Causes by Etiology and Frequency

Etiology	Examples	Estimated Frequency
<u>Congenital malformations</u>		7–17%
Malformations of the central nervous system, multiple malformation syndromes	Neural tube defects, Cornelia de Lange's syndrome	
<u>Exposure</u>		5–13%
Maternal infections, toxemia or placental insufficiency	Congenital rubella, human immunodeficiency virus, fetal alcohol syndrome, prematurity, radiation, trauma	



Classification of Mental Retardation Causes by Etiology and Frequency

Etiology	Examples	Estimated Frequency
<u>Perinatal causes</u>		2–10%
Infections, delivery problems, other	Meningitis, asphyxia, hyperbilirubinemia	
<u>Postnatal causes</u>		3–12%
Infections, delivery problems, other	Meningitis, asphyxia, hyperbilirubinemia	
Infections, toxins, other postnatal causes, psychosocial problems	Encephalitis, lead poisoning, traumas, brain tumors, poverty, psychotic illness	
<u>Unknown causes</u>		30–50%



ETIOLOGICAL FACTORS

1. GENETIC (e.g. chromosomal and inherited conditions).
For example, although Down syndrome (also known as trisomy 21) is a general medical condition, it is a form of mental retardation caused by the abnormality. Phenylketonuria is a genetic, metabolic disorder characterized by the inability to convert phenylalanine to tyrosine.
2. DEVELOPMENTAL (e.g. prenatal exposure to toxins and infections)



ETIOLOGICAL FACTORS

- ACQUIRED SYNDROMES (e.g., peri-natal trauma and socio-cultural factors).
- Abnormal accumulation of chemicals interferes with brain development and, if untreated, can result in mental retardation.
- Mental retardation has also occurred when fetuses were exposed to radiation, syphilis, oxygen deprivation, poor maternal nutrition, alcohol, or drugs in utero.



ETIOLOGICAL FACTORS

CONTD.....

- In approximately two thirds of all individuals with mental retardation, the probable cause can be identified. It is not unusual for a co-morbid mental disorder to be present.

(Sadock & Sadock, 2003).



Elements of the Clinical Evaluation of the Patient with Mental Retardation

- Clinical history including pre-natal and birth history
- Family pedigree (three generations)
- Relatives with learning problems, psychiatric disorders, mental retardation, and neurological or degenerative disorders
- Physical examination
- Assessment of minor physical anomalies
- Growth and physical development
- Head circumference compared to norms



Elements of the Clinical Evaluation of the Patient with Mental Retardation

- Use of photographs and video to document minor morphological variants and gait
- Complete neurological examination
- Documentation of behavior
- Dermatoglyphic examinations as indicated Adjunct diagnostics
- Audio logical, ophthalmologic, and psychometric assessments
- Diagnostic tests for selective use as indicated
- Skeletal radiographs



Elements of the Clinical Evaluation of the Patient with Mental Retardation

- Muscle biopsies
- DNA molecular studies
- Chromosome analysis
- Fragile X syndrome testing
- Organic and amino acids
- Imaging studies (magnetic resonance imaging and computed tomography)

The clinical examination should be performed with particular attention to the presence of minor anomalies, aberrant growth, and physical development.

RELATION WITH OTHER DISOTRDEERS



Fragile X Syndrome

- Fragile X syndrome, the most common inherited cause of mental retardation, results in a wide range of learning and behavioral problems, with men being more often and severely affected than women.



Prader-Willi Syndrome

- First identified in 1956, Prader-Willi syndrome affects approximately 1 in 15,000 births and is best known for its food-related characteristics.
- Babies invariably show hypotonia and pronounced feeding-sucking difficulties
- Young children between 2 years of age and 6 years of age develop hyperphagia and food-seeking behavior, such as food foraging and hoarding.




Prader-Willi Syndrome

- If compared to others with mental retardation, children and adults with Prader-Willi syndrome show high rates of temper tantrums, aggression, stubbornness, under activity, excessive daytime sleepiness, and emotional liability.
- These impulsive behaviors often lead people with Prader-Willi syndrome to need *more restrictive levels of care* than would be predicted by their mild levels of mental retardation.



Down Syndrome

- Occurring in 1.2 in 1,000 live births.
 - The most common chromosomal abnormality leading to mental retardation. It is most often the result of non-disjunction of chromosome 21.
 - Language impairment can be extensive, with particular difficulty in expressive language, grammar, and pronunciation.
 - Compared to others with mental retardation, persons with Down syndrome appear less often and less seriously to
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Williams Syndrome

- First identified in 1961, Williams syndrome is caused by a micro-deletion on chromosome 7 that includes the gene for elastin, a protein that provides strength and elasticity to certain tissues, such as the heart, skin, blood vessels, and lungs.
- Recent attention has focused on the interesting, possibly unique, cognitive-linguistic profile shown by many persons with this syndrome. Children with Williams syndrome show relative strengths in language.
- Although not every child with Williams syndrome shows



PSYCHOPATHOLOGY IN MENTAL RETARDATION

- Developmental disability is a significant risk factor for psychopathology in general, and, as may be inferred from the previous description of causes, this increased risk may derive from biological vulnerabilities, as well as risks that accrue from the environment.
- Moreover, individuals with IQs below 70 have a two- to fivefold higher rate of psychiatric disorders compared to normally developing persons.




Possible Contributions to Increased Vulnerability to Mental Disorders in Persons with Mental Retardation

- Neuro-pathological process responsible for mental retardation may also cause or increase risk for mental illness.
- Increased likelihood of loss and separation, particularly in out-of-home placements.
- Communication deficits may predispose to emotional or behavioral disturbance.
- Vulnerability to exploitation and abuse by others.
- Inadequate coping skills.
- Family stress may be heightened in presence of child with developmental disability.



ADHD

- The rates of ADHD in mental retardation are estimated to be between 9 percent and 18 percent.
 - Aggression and SIB are common in mental retardation and increase with greater severity of cognitive disability.
 - In a review of psychiatric consultations in an institutional setting, it was reported that SIB was specifically cited as a reason for referral in 36 percent of the 251 cases examined.
 - 8 percent of the general population, PTSD is an important diagnosis to consider in individuals with mental
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Psychosis

Patients with developmental disorders are at an increased risk for schizophrenia, bipolar disorder, and other mental illnesses that may include symptoms of thought disorder and hallucinations.



Mood Disorders

- Even in profound mental retardation, the diagnosis of mood disorders is fairly straightforward.
- Generally, a change in mood from baseline is obvious (recent onset lability, tearfulness, mood elevation, and irritability).
- If coupled with changes, of sufficient duration and causing sufficient impairment in adaptive function, in interests, activity level, sleep, appetite, or sexual behavior, the diagnoses of mania or of depression can be made in nonverbal patients.



Other Disorders

- Tourette's syndrome
- Somatoform disorders
- Depersonalization disorders
- Sexual disorders

These are less frequently diagnosed in the context of mental retardation.



TREATMENT

Prevention

- Preventive treatment strategies largely focus on prevention of intellectual disability and on mitigating associated complications. Example: treating associated mental disorders.
- The merits of primary prevention are obvious, and the successes enjoyed with PKU should continue to provide powerful incentive for the ongoing collaborations of basic scientists and clinicians.



- Recent evidence suggests that newborn metabolic

TREATMENT OF MENTAL DISORDERS

Mental retardation is a multidisciplinary problem, and optimal treatment is multimodal. Typically, a treatment plan includes attention to psycho-educational, psychotherapeutic, and psychopharmacological interventions.

- Psychotherapy
- Pharmacotherapy
- Antidepressants
- Anticonvulsants
- Anxiolytics



Service Needs and Resources for Families of Children at Different Ages

Age of Child	Needs
<i>0–3 yrs of age</i>	
Child	Evaluation: physical, motor, cognitive, linguistic, social-emotional. Early intervention services.
Mother	Emotional support. Care-taking behaviors.
Family	Support. Financial assistance. Information.



Service Needs and Resources for Families of Children at Different Ages

Age of Child	Needs
<i>3–21 yrs of age</i>	
Child	Evaluation, referral, and Individualized Education Plan.
Mother	Information. Financial assistance. Support.
Family	Information. Financial assistance. Support.



Service Needs and Resources for Families of Children at Different Ages

Age of Child	Needs
<i>Older than 21 yrs of age</i>	
Offspring	Residential services. Work.
Family	Support. Information. Guardianship issues.



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